

Direct of Dina DiFranco:

1. Could you please introduce yourself to the jury & spell your last name for the record?
I am a forensic chemist.
2. What is your profession?
I am a forensic chemist.
 - a. How long have you been a chemist?
A little over one year.
3. Where is your current place of employment?
Massachusetts State Police Crime Laboratory
 - a. How long have you worked there?
A little over one year.
 - b. What is the address of your current place of employment?
59 Horse Pond Road in Sudbury
 - c. Who is your current supervisor? Nancy Brooks
 - i. What is your supervisor's position title? Chemist III
 - ii. Whom do you supervise? No one
 - d. When did you begin working at your current place of employment?
June of 2008
 - e. What do you do there? I analyze drug evidence to test for the presence or absence of controlled substances.
 - a. How often do you perform lab tests? Approx. 15 cases a week.
(It would be really hard to count the number of tests; we usually answer using the number of cases analyzed)
 - b. How many lab tests have you performed in your career as a chemist? A little over 1,000 cases.
 - c. How many lab reports have you authored in your career as a chemist? A little over 1,000.
 - i. What types of tests do you do and on what substances?
(I guess I'll just list the tests that I performed in this case)
UltraViolet/Visible Spectrophotometry (UV), Infrared Spectrophotometry (IR), Gas Chromatography/Mass Spectrometry (GC/MS)
 - ii. How do you perform those lab tests?
UV: I take a sample and put it into solution with a suitable solvent and then place that sample in the path of ultraviolet radiation. Certain compounds behave characteristically depending on their absorption of this radiation.
IR: This test is similar to the UV, except that it utilizes infrared radiation.
GC/MS: A sample is put into solution and injected into the GC/MS. The gas chromatography part of the instrument separates the sample into its individual components and the mass spectrometer part of the instrument identifies those components by breaking down each component into its

most elemental pieces. The components are then identified based on that fragmentation pattern.

(I could go into more detail if necessary, but you probably wouldn't want me to because I think the jury would stop listening!)

iii. What does a lab test show?

The UV is a screening test and it shows you what you could possibly have in your sample, in this case it showed that the sample could possibly have cocaine in it. The IR is an intermediate test and it showed that the samples are cocaine hydrochloride and that they contain lactose as a diluent (a diluent is something that is added to give bulk/weight). GC/MS is a confirmatory test that showed the samples contain cocaine and levamisole/tetramisole as an adulterant (an adulterant is something that is added in order to try and increase the physiological effects). This test was also used quantitatively to determine the purity of the cocaine, which was approx. 48%.

iv. What special skills do you possess that enable you to set up a lab test?

I was trained for six months on casework and the subsequent testing that is done.

d. How often do you prepare lab reports? About 15 per week.

i. Who are they given to? After I collect all the data and write the report, the case file goes to peer review.

4. Which professional organizations are you a member of? I am a member of the American Academy of Forensic Sciences.

a. What are your dates of membership? Since 2008.

5. Where did you work previously to where you work now? [repeat for each prior relevant place of employment] NMS Labs.

a. Where is that located? Willow Grove, PA

b. When did you begin to work there? 2007

c. What did you do there? [see also #2] I was a specimen processor and I aliquoted biological specimens for toxicology testing.

d. Why did you leave that job? Because I graduated from graduate school and had the opportunity to become a forensic chemist for the Massachusetts State Police.

6. What is the highest level of education you have attained as a chemist?

I have a Masters in Forensic Science.

a. What school/college/university did you attend? Arcadia University

b. When did you begin attending that school? 2006

c. When did you graduate? 2008

d. What was your major/ specialty? Forensic Science

e. What honors did you receive? I graduated with distinction.

f. What chemistry courses did you take? Instrumental Chemistry, Polymers, Forensic Chemistry, Forensic Toxicology

- a. Was there a lab component to these courses? Yes
- b. How did you set up labs for these courses? ? (I didn't the teacher did)
 - i. When did you learn how to set up a lab test? ?
- c. How did you prepare reports on your findings for these courses? I collected my data and reported my findings.
- d. How often did you review other students' lab reports? I don't believe I did.

g. What other science classes did you take? Genetics, Forensic Biology...

- a. Was there a lab component to these courses? Yes
- b. How did you set up labs for these courses? ?
- c. How did you prepare reports on your findings for these courses? I collected my data and reported my findings.
- d. How did you review other students' lab reports? I didn't.

h. What did you teach while attending school? I taught high school students at the Forensic Mentors Institute.

- a. When did you teach? For how long? It was a summer program.
 - i. What was the nature and scope of your responsibilities? We were given a research project in the field of forensic toxicology.
- b. How much time per week did you spend teaching? 40 hours a week.

7. What other degrees do you have in the field of chemistry/ science? [repeat as necessary] I have a Bachelors of Science in Chemical Engineering.

- a. Where did you get that degree? The Pennsylvania State University.
- b. When did you begin attending that school/college/university? 2001
- c. When did you graduate? 2006
- d. What was your major/specialty? Chemical Engineering
- e. What courses did you take? Mostly Chemistry, Chemical Engineering and Math courses.
 - i. Was there a lab component to these courses? Yes for the chemistry and engineering.
 - ii. How did you prepare reports on your findings for these courses? I collected the data and reported my findings.

8. What publications have you written or taken part in that is related to lab tests or lab test result interpretation? I took part in a poster publication at the Forensic Mentors Institute, "Optimizing the Methodology for the Analysis of 2-Imino-Thiazolidine-4-Carboxylic Acid Using Solid Phase Extraction"

9. Did you have the opportunity to perform testing on the substances submitted to your lab in connection with this case?

10. Showing you an item, do you recognize it?

11. What do you recognize it to be? (substance analyzed in this case)

12. How do you recognize it to be the substance you analyzed in connection with this case? (numbers match)

13. Did the testing lead you to form an opinion as to the identity of the substance?
14. What is your opinion as to the identity of the substance? The powder was found to contain approx. 48% cocaine and it also contained lactose and levamisole/tetramisole.
 - a. What is your opinion as to the composition of the substance? What is your opinion as to the quality of the substance? See 10
 - i. How are unidentified substances analyzed in a lab test? Every substance is treated as an unknown substance. We don't look at white powder and assume it is cocaine.
 - ii. What is the procedure for analyzing unidentified substances? The same instruments are used in all drug testing.
 1. How is what you believe to be this particular substance analyzed in a lab test? The white powder is subjected to a screening test, UV/VIS and also confirmatory testing, IR and/or GC/MS.
 - iii. What is ultraviolet spectra photometry?
It is an analytical technique that uses ultraviolet radiation in order to determine what may be present in the sample.
 1. What is your opinion as to the ultraviolet spectra photometry data/ notes regarding this substance? The sample may contain cocaine.
 - iv. What is infrared spectra photometry?
It is an analytical technique that uses infrared radiation in order to determine what is present in the sample.
 1. What is your opinion as to the infrared spectra photometry data/ notes regarding this substance? The samples contain cocaine hydrochloride and lactose.
 - b. In your opinion, what is the weight of the substance? 7.71 grams
 - i. How did you determine the weight? I removed the powder from the knotted plastic bags that they were contained in and used a scale to weigh the powder.
 - ii. What is the procedure for weighing unidentified substances in a lab test? You can weigh the powder or you can weigh the powder plus its packaging and then weigh the packaging and subtract the difference. If you have a lot of bags you can do the 95% confidence level, which is a statistics program that allows you to calculate the weight of a lot of bags of powder with weighing a minimum of three bags. (This one is kind of a hard one to explain! Unfortunately I did use the stats program for this case since there were fifteen bags. I weighed five and used the confidence level to calculate the weight of all fifteen. This could get confusing, but luckily this is not over trafficking so maybe we could avoid going down this road. But if necessary I will come up with a clear and concise explanation.)
 1. How is this substance weighed? The same way.